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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/767,624	01/28/2004	David Paul Miller	USG 3399	5781

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EXAMINER	
BUTLER, PATRICK	

ART UNIT	PAPER NUMBER
1732	

DATE MAILED: 10/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/767,624	MILLER ET AL.	
	Examiner	Art Unit	
	Patrick Butler	1732	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 July 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 3-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 3-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *20050518*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

The Applicant's Amendments and Accompanying Remarks, filed 11 June 2005, have been entered and have been carefully considered. No Claims are new, Claims 1, 5, 6, 9, and 12-14 are amended, Claim 2 is canceled, and Claims 1 and 3-14 are pending.

In view of Applicant's amendment of claims 6, 5, and 14, the Examiner withdraws the previously set forth objection as detailed in the Claim Objections section of the Office Action dated 15 April 2005.

In view of Applicant's amendment of claims 12, the Examiner withdraws the previously set forth 35 U.S.C. 112, second paragraph rejection as set forth in the Claim Rejections - 35 USC § 112 section of the Office Action dated 15 April 2005.

Despite these advances, the invention as currently claimed is not found to be patentable for reasons herein below. Due to the claimed matter of Claim 2 being incorporated into Claim 1 per Applicant's Amendment filed 11 June 2005, the 35 USC 102(b) rejection of Claims 1 is withdrawn. Due to amendment, the 35 USC 103 rejection has been modified.

Moreover, newly claimed matter in claims 9 and 13 necessitated a new search for, and incorporation of, prior art.

The Text of those sections of Title 35, US Code not included in this action can be found in a prior Office Action.

Claim Rejections - 35 USC § 103

Claims 1 and 3-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,320,677 (Baig) in view of U.S. Patent No. 3,835,219 (Jaunarajs et al.).

Claim 1, 5, and 6

Note that Claim 5 is essentially the same as the Claim 1; therefore, claim 5 is rejected herein for substantially the reasons set forth with regard to claim 1 hereafter.

Baig teaches a method of producing a composite material (in an improved process for producing a composite product) including mixing wood fibers, gypsum and water to form a dilute slurry (mixing water, gypsum and a cellulosic fiber to form a dilute slurry); processing the slurry in a pressure vessel at a temperature sufficient to convert the gypsum to calcium sulfate alpha hemihydrate while continuously agitating the slurry with gentle stirring or mixing to break up any fiber clumps and keep all of the fibers in suspension (heating the slurry, under pressure, to form acicular calcium sulfate alpha hemihydrate crystals); removing the calcined slurry from the pressure vessel; substantially dewatering the slurry to form a filter cake (substantially dewatering the hot slurry); pressing, molding or otherwise shaping the dewatered filter cake (shaping the dewatered slurry to form a composite product before rehydrating the hemihydrate back to gypsum); rehydrating the filter cake by allowing the filter cake to cool; and drying the filter cake to remove the remaining water from the rehydrated filter cake (abstract; column 4, lines 26-59). Baig further teaches that crystal modifiers, such as for example organic acids, can be added to the slurry while being agitated in the pressure vessel to stimulate of retard crystallization or to lower the calcining temperature (adding a crystal

modifier to said dilute slurry and heating said slurry at a reduced temperature and/or for a reduced time to form acicular calcium sulfate alpha hemihydrate crystals) (column 6, lines 41-58).

Although Baig teaches the addition of a crystal modifier to lower the calcining temperature as claimed, Baig does not specifically teach the crystal modifiers set forth in claim 2. However, Jaunarajs et al. teach a method for the preparation of fibrous soluble calcium sulfate anhydrite including forming an aqueous suspension of gypsum including a small amount of a crystal habit modifier which is suitable for the formation of fibrous soluble anhydrite and converting the suspension to fibrous soluble hemihydrate by reaction in a pressure vessel in the presence of saturated steam at a temperature in the range from 140°C to 200°C for a period of up to 3.0 hours to form fibers having aspect ratios in the range of from 10:1 to 100:1 (the aspect ratio of said hemihydrate crystals is increased to at least 5:1) wherein the crystal habit modifier is acids and salts thereof and other salts such as sodium chloride, sodium sulfate, aluminum sulfate and zinc sulfate (said crystal modifier is selected from the group of aluminum chloride, ... , zinc sulfate, ... and trisodium phosphate) (column 2, lines 24-59). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use zinc sulfate as the crystal modifier in the process of Baig as taught by Jaunarajs et al. to provide more accurate and more extensive control of the crystal formation (e.g., the aspect ratio) in the process of Baig. With regard to the crystal modifier causing an increase in the aspect ratio of the crystals in the process of Baig in view of Jaunarajs et al. as set forth in claim 5, the

examiner stipulates that one of ordinary skill in the art would have obviously recognized that aspect ratio of the crystals was increased by the addition of the crystal habit modifier because the process of Baig in view of Jaunarajs et al. would be capable of producing aspect ratios within the claimed range as set forth above (see column 2, lines 38-42 of Jaunarajs et al.).

Claims 3, 4, 7 and 8

The discussion of Baig and Jaunarajs et al. as applied to claims 1, 5 and 6 above applies herein.

Although Baig teaches the addition of a crystal modifier to lower the calcining temperature as claimed, Baig does not specifically teach that the amount of crystal modifier is from about 0.05% to about 5%, or more particularly about 0.1% to about 1% by weight based on the weight of gypsum. However, Jaunarajs et al. further teach that the crystal habit modifier is present in an amount of from 0.1 to 5 weight percent, preferably 0.25 to 1.5 percent (the amount of crystal modifier is from about 0.05% to about 5% by weight, based on the weight of gypsum; the amount of crystal modifier is from about 0.1% to about 1% by weight, based on the weight of gypsum) (column 3, lines 17-19). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use zinc sulfate, in the claimed amounts, as the crystal modifier in the process of Baig as taught by Jaunarajs et al. to provide more accurate and more extensive control of the crystal formation (e.g., the aspect ratio) in the process of Baig.

Claims 9-14

As the process of Baig does not include interruptions of steps or sequence, the process is interpreted to be continuously performed. Moreover, the process is described as continuous (see Col. 5 line 1-4). Baig teaches a method of continuously producing a composite material (in an improved process for producing a composite product) including mixing wood fibers, gypsum and water to form a dilute slurry (mixing water, gypsum and a cellulosic fiber to form a dilute slurry); processing the slurry in a pressure vessel at a temperature sufficient to convert the gypsum to calcium sulfate alpha hemihydrate while continuously agitating the slurry with gentle stirring or mixing to break up any fiber clumps and keep all of the fibers in suspension (heating the slurry, under pressure, to form acicular calcium sulfate alpha hemihydrate crystals); removing the calcined slurry from the pressure vessel; substantially dewatering the slurry to form a filter cake (substantially dewatering the hot slurry); pressing, molding or otherwise shaping the dewatered filter cake (shaping the dewatered slurry to form a composite product before rehydrating the hemihydrate back to gypsum); rehydrating the filter cake by allowing the filter cake to cool; and drying the filter cake to remove the remaining water from the rehydrated filter cake (abstract; column 4, lines 26-59). Baig further teaches that crystal modifiers, such as for example organic acids, can be added to the slurry while being agitated in the pressure vessel to stimulate of retard crystallization or to lower the calcining temperature (column 6, lines 41-58).

Although Baig teaches the addition of a crystal modifier, Baig does not specifically teach the crystal modifier is alum. Baig further does not teach that the

aspect ratio is maintained between 5:1 and 50:1 as set forth in claims 10-12. However, Jaunarajs et al. teach a method for the preparation of fibrous soluble calcium sulfate anhydrite including forming an aqueous suspension of gypsum including a small amount of a crystal habit modifier which is suitable for the formation of fibrous soluble anhydrite and converting the suspension to fibrous soluble hemihydrate by reaction in a pressure vessel in the presence of saturated steam at a temperature in the range from 140^{o}C to 200^{o}C for a period of up to 3.0 hours to form fibers having aspect ratios in the range of from 10:1 to 100:1 (said first selected value is at least 5:1; said first selected value is at least 10:1; said second selected value is not greater than 50:1; the amount of alum being sufficient to maintain the aspect ratio of said crystals to at least about 5:1 and no greater than about 50:1; the amount of alum adjusted to maintain the aspect ratio of said crystals to at least about 10:1 and no greater than about 50:1) wherein the crystal habit modifier is acids and salts thereof and other salts such as sodium chloride, sodium sulfate, aluminum sulfate (alum) and zinc sulfate (column 2, lines 24-59). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use alum as the crystal modifier in the process of Baig to provide a product having an aspect ratio in the claimed range as taught by Jaunarajs et al. to provide more accurate and more extensive control of the crystal formation (e.g., the aspect ratio) in the process of Baig.

With regard to the step of "monitoring the aspect ratio" set forth in claims 9 and 13, the examiner stipulates that one of ordinary skill in the art when viewing the teachings of Baig and Jaunarajs et al. as a whole would have obviously recognized that

the aspect ratio must intrinsically be monitored in some type of fashion in the process of Baig in view of Jaunarajs et al., even if not specifically stated, to assure that the aspect ratio is maintained in the desired and claimed range (e.g., 10:1 to 50:1). The process of Baig in view of Jaunarajs et al. would teach the broadly claimed monitoring step of claims 9 and 13.

With regard to the "continuously monitoring" set forth in Claims 9 and 13, the Baig as the process is continuous and the monitoring is done as part of the process, then the monitoring would necessarily be continuous as well.

With regard to the steps of "increasing the amount of alum" and "decreasing the amount of alum" set forth in claim 9, the examiner stipulates that these steps are optional because they are only required *when* the monitoring indicates that the aspect ratio is out of the claimed range. If the aspect ratio was constantly maintained within the claimed range, as would obviously be desired in the process of Baig in view of Jaunarajs et al. to minimize the amount of waste product, the claimed steps of "increasing the amount of alum" and "decreasing the amount of alum" would not be required, and therefore would be optional. As such, the process of Baig in view of Jaunarajs et al. is not required to teach the optional steps of adjusting the amount of the crystal modifier (i.e., alum) as set forth in claim 9. However, even if the steps of adjusting the amount of the crystal modifier are not optional, the steps would have been obvious as further discussed with regard to claim 13 below.

With regard to the step of "adjusting the amount of alum used to form said slurry" set forth in claim 13, the examiner stipulates that one of ordinary skill in the art, when

viewing the teachings of Baig and Jaunarajs et al. as a whole, would have obviously recognized that the amount of crystal modifier (i.e., alum) in the process of Baig in view of Jaunarajs et al. must intrinsically be adjusted in some fashion during the process of Baig in view of Jaunarajs et al., even if not specifically stated, to maintain the aspect ratio within the desired and claimed range (e.g., 10:1 to 50:1). If the amount of crystal modifier was not accurately set and not increased and/or decreased as needed during the process of Baig in view of Jaunarajs et al., the product formed would not have the desired characteristics and a great amount of undesired, waste product would be generated. Note that claim 13, as currently written, does not require the steps of "monitoring the aspect ratio" and "adjusting the amount of alum" to be interrelated (e.g., adjusting in response to the monitoring).

Claims 9-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,320,677 (Baig) in view of U.S. Patent No. 3,835,219 (Jaunarajs et al.) and Spiring (Total Quality Management Vol. 6, No. 1, 1995, Pages 21-33).

Claims 9-14

As the process of Baig does not include interruptions of steps or sequence, the process is interpreted to be continuously performed. Moreover, the process is described as continuous (see Col. 5 line 1-4). Baig teaches a method of continuously producing a composite material (in an improved process for producing a composite product) including mixing wood fibers, gypsum and water to form a dilute slurry (mixing water, gypsum and a cellulosic fiber to form a dilute slurry); processing the slurry in a pressure vessel at a temperature sufficient to convert the gypsum to calcium sulfate

alpha hemihydrate while continuously agitating the slurry with gentle stirring or mixing to break up any fiber clumps and keep all of the fibers in suspension (heating the slurry, under pressure, to form acicular calcium sulfate alpha hemihydrate crystals); removing the calcined slurry from the pressure vessel; substantially dewatering the slurry to form a filter cake (substantially dewatering the hot slurry); pressing, molding or otherwise shaping the dewatered filter cake (shaping the dewatered slurry to form a composite product before rehydrating the hemihydrate back to gypsum); rehydrating the filter cake by allowing the filter cake to cool; and drying the filter cake to remove the remaining water from the rehydrated filter cake (abstract; column 4, lines 26-59). Baig further teaches that crystal modifiers, such as for example organic acids, can be added to the slurry while being agitated in the pressure vessel to stimulate of retard crystallization or to lower the calcining temperature (column 6, lines 41-58).

Although Baig teaches the addition of a crystal modifier, Baig does not specifically teach the crystal modifier is alum. Baig further does not teach that the aspect ratio is maintained between 5:1 and 50:1 as set forth in claims 10-12. However, Jaunarajs et al. teach a method for the preparation of fibrous soluble calcium sulfate anhydrite including forming an aqueous suspension of gypsum including a small amount of a crystal habit modifier which is suitable for the formation of fibrous soluble anhydrite and converting the suspension to fibrous soluble hemihydrate by reaction in a pressure vessel in the presence of saturated steam at a temperature in the range from 140^{O}C to 200^{O}C for a period of up to 3.0 hours to form fibers having aspect ratios in the range of from 10:1 to 100:1 (said first selected value is at least 5:1; said first selected value is at

least 10:1; said second selected value is not greater than 50:1; the amount of alum being sufficient to maintain the aspect ratio of said crystals to at least about 5:1 and no greater than about 50:1; the amount of alum adjusted to maintain the aspect ratio of said crystals to at least about 10:1 and no greater than about 50:1) wherein the crystal habit modifier is acids and salts thereof and other salts such as sodium chloride, sodium sulfate, aluminum sulfate (alum) and zinc sulfate (column 2, lines 24-59). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use alum as the crystal modifier in the process of Baig to provide a product having an aspect ratio in the claimed range as taught by Jaunarajs et al. to provide more accurate and more extensive control of the crystal formation (e.g., the aspect ratio) in the process of Baig.

With regard to the step of "monitoring the aspect ratio" set forth in claims 9 and 13, the examiner stipulates that one of ordinary skill in the art when viewing the teachings of Baig and Jaunarajs et al. as a whole would have obviously recognized that the aspect ratio must intrinsically be monitored in some type of fashion in the process of Baig in view of Jaunarajs et al., even if not specifically stated, to assure that the aspect ratio is maintained in the desired and claimed range (e.g., 10:1 to 50:1). The process of Baig in view of Jaunarajs et al. would teach the broadly claimed monitoring step of claims 9 and 13.

With regard to the steps of "increasing the amount of alum" and "decreasing the amount of alum" set forth in claim 9, the examiner stipulates that these steps are optional because they are only required *when* the monitoring indicates that the aspect

ratio is out of the claimed range. If the aspect ratio was constantly maintained within the claimed range, as would obviously be desired in the process of Baig in view of Jaunarajs et al. to minimize the amount of waste product, the claimed steps of "increasing the amount of alum" and "decreasing the amount of alum" would not be required, and therefore would be optional. As such, the process of Baig in view of Jaunarajs et al. is not required to teach the optional steps of adjusting the amount of the crystal modifier (i.e., alum) as set forth in claim 9. However, even if the steps of adjusting the amount of the crystal modifier are not optional, the steps would have been obvious as further discussed with regard to claim 13 below.

With regard to the step of "adjusting the amount of alum used to form said slurry" set forth in claim 13, the examiner stipulates that one of ordinary skill in the art, when viewing the teachings of Baig and Jaunarajs et al. as a whole, would have obviously recognized that the amount of crystal modifier (i.e., alum) in the process of Baig in view of Jaunarajs et al. must intrinsically be adjusted in some fashion during the process of Baig in view of Jaunarajs et al., even if not specifically stated, to maintain the aspect ratio within the desired and claimed range (e.g., 10:1 to 50:1). If the amount of crystal modifier was not accurately set and not increased and/or decreased as needed during the process of Baig in view of Jaunarajs et al., the product formed would not have the desired characteristics and a great amount of undesired, waste product would be generated. Note that claim 13, as currently written, does not require the steps of "monitoring the aspect ratio" and "adjusting the amount of alum" to be interrelated (e.g., adjusting in response to the monitoring).

With regard to the "continuously monitoring" set forth in Claims 9 and 13, the Baig as the process is continuous and the monitoring is done as part of the process, then the monitoring would necessarily be continuous as well. Moreover, Spiring teaches continuously monitoring of a process's ability/capability. As the process ability/capability is a function of the process variables, Spiring teaches continuously monitoring of the process variables, particularly via control chart (See Spiring, Abstract, page 7, second paragraph of Introduction page 21, third new paragraph page 22).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Spiring's continuous process monitoring with the process as taught by Baig and Jaunarajs in order to assess the ability of a process to meet customer requirements.

Response to Arguments

Applicant's arguments filed 11 June 2005 have been fully considered but they are not persuasive.

Applicant argues with respect to the 35 USC 102(b) rejection, which has been withdrawn specifically due to amendment of the rejected claims. As the rejection is withdrawn, such arguments are made moot.

Applicant argues with respect to the 35 USC 103(a) rejections. Applicant's arguments appear to be on the grounds that:

1) Incorporating the production steps of Jaunarajs make a different product.

2) Most of the Jaunarajs's crystal habit modifiers are organic.

3) Jaunarajs's does not state the function of the crystal habit modifiers, and they do not perform the same function.

4) Jaunarajs's process and anhydrite would not be suitable for use in the Baig process.

5) Claims 3, 4, 7, and 8 are not obvious for the same reason that 2, 5, and 6 are not obvious.

6) Continuous monitoring is not taught by the Jaunarajs's batch process, though it would be required by the claimed process in Claims 9-14.

7) The incorporation of Jaunarajs's process would make a different product.

The Applicant's arguments are addressed as follows:

1-4 and 7) Jaunarajs's crystal habit modifiers are relied upon to provide the crystal modifiers as taught by Baig. The process beyond that is not relied upon in the rejection. The specific modifiers relied upon are not organic.

5) Reasons of obviousness as stated in the rejection are relied upon for obviousness of the combination of references as sited.

6) As Baig teaches a continuous process that is controlled to an end result, the process is monitored as described in the rejection. Moreover, the process is continuous, and as the monitoring is a part of the process, it would be continuous as well. Moreover, a reference taught by Spiring is additionally relied upon to teach that continuous monitoring is used.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick Butler whose telephone number is 571-272-8517. The examiner can normally be reached on Monday through Friday 7:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Colaianni can be reached on 571-272-1196. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PB

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